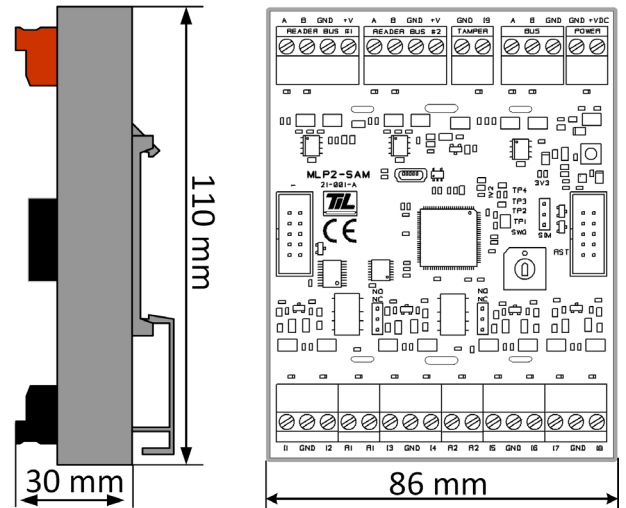## Overview

MLP2-SAM is a specialised module, from the ML CUBE range.
Connected to the TILLYS CUBE, it allows management of access control, intrusion and B.M.S

This module is designed to meet the highest security standards set by the ANSSI. It allows to insert directly in the module a SAM AV2 card certified EAL 5+ in SIM format containing the badge keys.

It allows to manage up to 2 access points thanks to its 2 bus readers. Its 9 configurable inputs (NO/NC , supervised , ...) allow the feedback of informations coming from access control, intrusion and B.M.S

It connects to a TILLYS CUBE module via an AES secure RS485 bus.
It is possible to connect 8 MLP2 CUBE modules per bus.
The firmware update is carried out directly via the web interface of the TILLYS CUBE.

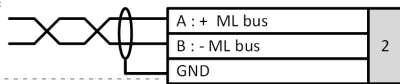| TECHNICAL DETAILS	
Power supply / Consumption	**Operating range** : 12 - 28 VDC
Consumption (bare electronic module)	30mA typ. at 13,6 VDC 15mA typ. at 27 VDC
Operating temperature	-10ºC to +55ºC
RS485 bus type	ML CUBE
Addressing range on the ML CUBE	1 to 8
SAM card compatiblity	FW 5.x : SAM AV2 only ⚠️ Auto-Lock option must be enabled
Badge compatiblity	FW 5.x : DESfire EV1 only ⚠️
Maximum number of readers	2 readers (MLP2 CUBE @1 to 7) 1 reader (MLP2 CUBE @8)
Number of inputs	9
Number of relay outputs	2
Response time between badge presentation and the control of the relay	< 0.5 second
Maximum continuous current allowed by relays	2 A
Maximum power allowed by relays	48 V
Maximum relay power	48 W exemples : 12V / 2A 24V / 2A 48V / 1A
Alternative current relay wiring	**Warning**: The wiring of relays on alternative current has not been validated and the responsability of TIL technologies can not be involved incase of material deterioration for this type of installation. **Max suggested Power**: 50W

Wiring

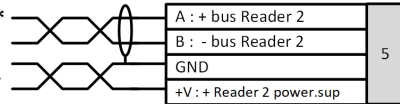|		
Power 12 to 28 V DC	+VDC	1
	GND	
ML CUBE BUS * Use 1 twisted pair Max length 600 m	A : + ML bus	2
	B : - ML bus	
	GND	
BUS A + Power + Tamper **via HE10 connector (2A max)**	Connection HE10 bus	3
Reader 1 * **RS 485 Bus + Power supp** Refer to the reader technical datasheet. *Note*: The output voltage of the power supply is the same as the power supply voltage of the MLP2.	A : + bus Reader 1	4
	B : - bus Reader 1	
	GND	
	+V : + Reader 1 power.sup	
Reader 2 * **RS 485 Bus + Power supp** Refer to the reader technical datasheet. *Note*: The output voltage of the power supply is the same as the power supply voltage of the MLP2.	A : + bus Reader 2	5
	B : - bus Reader 2	
	GND	
	+V : + Reader 2 power.sup	
9 Configurable inputs See QR code on page 3	Ix	6
	GND	
	Ix	
I9 predisposed for tamper management	I9 or TAMPER	7
	GND	
2 output bistable relays	Rx	8
	Rx	
Default output relay status Configuration by jumpers (left R1, right R2) Electrically reboot the module after modification	NO : norm. open	9
	C : common	
	NC : norm. closed	
SAM Card mode Place jumper in low position only (2-3)	1 : not implemented	10
	2 : common	
	3 : removable SAM Card	
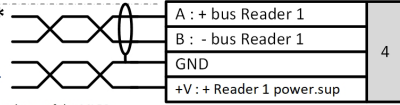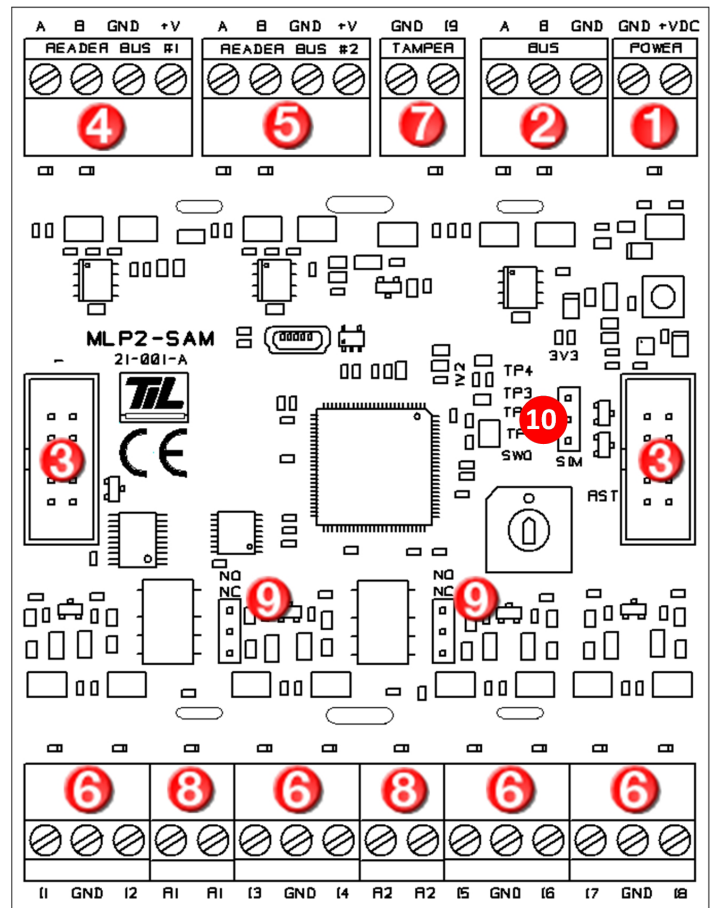
SAM card

The SAM card must be configured with Auto-Lock option enabled.

The SAM card is inserted on the back of the module.

ATTENTION : Module must not be powered when inserting or extracting the SAM card.
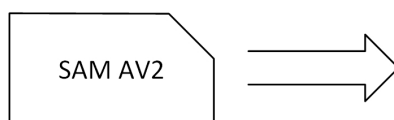
Flip the electronic card :

SAM AV2
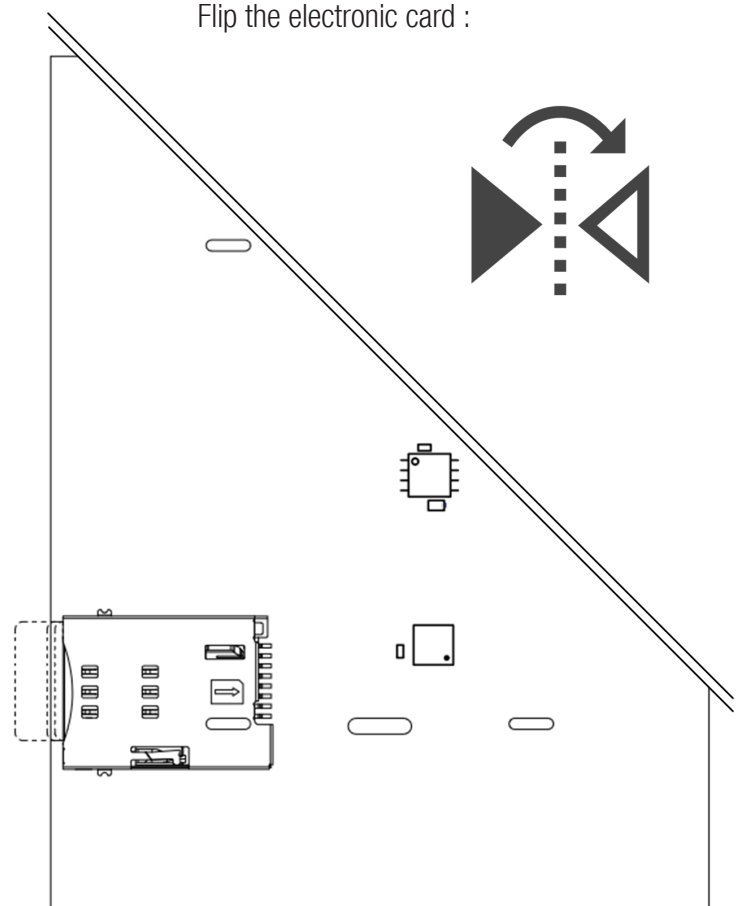
Wiring rules for connecting the module to the RS485 bus of the TILLYS CUBE

- The wiring cable must be at least AWG20 (8/10e), SYT1, shielded F/UTP pairs.
- The cable shield must be connected to the power supply GND on both ends.
- The bus RS485 A and B signals must be connected using the same twisted pairs.
- Power supply +V and GND must be connected using the same twisted pairs.
- Any wires that are not being used must be connected to GND on both ends.
- Any cable conduct must be connected to GND on both ends.
- The power supply GND must be connected to the GROUND.

Module addressing

The jog wheel allows the addressing of the modules. :

1 = Address 1
2 = Address 2
...
8 = Address 8

Caution : Reboot electronically the module after modification.

Complementary information

Flash or click on the following QR code to obtain further information on module and door object installation :

Examples :

- I/O wiring
- Door object wiring